

REMARKS

Upon careful and complete consideration of the Final Office Action dated October 30, 2007, applicant has amended the claims which, when considered in conjunction with the comments herein below, are deemed to place the present application into condition for allowance. Favorable reconsideration of this application, as amended, is respectfully solicited.

The final Office Action maintained the rejection of claims 14, 16, 18-34 and 36-47 under 35 U.S.C. §102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly being obvious over EP 0447359 (hereinafter referred to as "Wong et al."), JP 7067536 and U.S. Patent No. 5,525,360 (hereinafter referred to as "Yatka et al."). The Office Action cited Wong et al. for teaching a synergistic sweetening composition comprising polydextrose, monosaccharides, and/or disaccharides; JP 7067536 for teaching the combination of polydextrose and sugar; and Yatka et al. for teaching a composition comprising polydextrose and additional sugar compounds including sucrose and maltose. In making its rejections, the Office Action further alleged that "[s]ynergism would be inherent to that of Wong et al, JP 7067536 and Yatka et al as the same components are used" and that "the concept of synergism in the sweetener art is well-known and expected." In order to expedite the prosecution of the subject application, applicant has canceled all product claims and is directing the present invention to a method for enhancing the sweetness of a product by synergistically enhancing the sweetness of sugar compounds therein. As will be argued below, such a method is clearly novel to any method found in the prior art.

Specifically, the present invention as now claimed is directed to a method for enhancing the sweetness of an edible product, comprising including in an edible product sweetened with a sweet tasting sugar compound polydextrose selected from purified and hydrogenated polydextrose having a pH of 3.5 to 6.5 and an acidity of 0.0003 meq/g or less, in an amount sufficient for synergistically enhancing the

sweetness of said sugar compound, which is selected from the group consisting of sucrose, fructose, glucose, lactose, maltose, maltulose, isomaltulose, galactose and mixtures or syrups thereof.

It is further noted that the present invention has also been limited by a definition of the pH and acidity of the polydextrose to clearly indicate that the polydextrose used in the present invention is the new type of purified and/or hydrogenated polydextrose which has a nice and clean taste and a very low acidity (0.003 meq/g or less). It is respectfully submitted that most of the polydextrose products used in the cited references, which date from the early 1990's were of the old type of polydextrose which was rather acid (i.e. had a pH of about 3 or less and a bitter taste). The new purified and/or hydrogenated polydextrose (Litesse II and Litesse Ultra – see pages 6-7 of the subject specification) has a pH above 3.5 and an acidity less than 0.003 meq/g.

Wong et al. teach a synergistic combination between the old type of improved polydextrose and a very specific artificial sweetener, i.e. 1-chloro-1'-deoxysucrose, which is a synthetic compound closely related to the well-known intense sweetener sucralose. Sucralose has an inherent sweetness, which is about 600 times as high as that of sucrose.

Wong et al. note on page 3, lines 35 to 36, that each intense sweetener is chemically distinct and that each sweetener presents a different challenge in respect to its use. There is no suggestion in Wong et al. that polydextrose has any effect on the sweetness of sucrose, nor on the sweetness of any other non-intense sweeteners. To the contrary, Wong et al. note on page 2, lines 42 to 43, that because polydextrose is not sweet, intense sweeteners must be used with polydextrose. The fact that polydextrose has been found to synergistically increase the sweetness of one specific halogenated derivative of sucrose with an intense sweetness of its own in no way teaches or makes it obvious or even likely that polydextrose has any such effect on the non-halogenated mono- and disaccharides of the present invention.

Said in a slightly different manner, it should be realized that in accordance with the teachings of Wong et al., the person skilled in the art finds that the sweetness of one very specific compound, i.e. 1-chloro-1'-deoxysucrose, is affected

by polydextrose. It is respectfully submitted that the skilled artisan could not in any clear and logical manner realize that polydextrose has a sweetness-enhancing effect on other sugar compounds. In fact, based on Wong et al., the opposite is true. By picking out one so specific and synthetic sugar as 1-chloro-1'-deoxysucrose, Wong et al. suggests that the synergistic effect is a specific property existing for the combination of this compound with polydextrose and that it is surprising in its own context. Nowhere in Wong et al. is it taught or even suggested of any likelihood that the same effect would be true for other compounds and other combinations.

Wong et al. suggest on page 9, lines 38 to 51, that bulking agents such as sucrose, fructose, and glucose may be added into the chewing gum composition sweetened with 1-chloro-1'-deoxysucrose. However, Wong et al. do not teach or even suggest that the polydextrose has a synergistic effect on the sweetness of the sugar bulking agent nor would the skilled person based on Wong et al. have used polydextrose for increasing the sweetness of the sugar bulking agent. The teaching of Wong et al. is clearly to use an intense sweetener to provide the sweetness that is needed.

It is again stressed that the present claims have been limited to a method for enhancing the sweetness of simple natural sugars such as sucrose, fructose, glucose, etc in an edible product or as such. Such a method is neither anticipated by Wong et al. nor can be considered obvious in view of the synergism shown in Wong et al. between polydextrose and 1-chloro-1'-deoxysucrose.

As specifically pointed out in the application, the present invention relates to a synergistically enhanced sweetness independently of any intense sweeteners. As set forth in the subject specification on page 4, last paragraph, "[i]t is indeed most surprising that polydextrose is capable of enhancing the sweetness of sucrose, since polydextrose has heretofore been considered to be a good substitute for sugar except for the sweetness of the sugar, On the contrary, the use of polydextrose as a sugar substitute has been considered to render it necessary to add other compounds to compensate for the decreased sweetness provided by the substituting polydextrose." It is noted that new claim 55 specifically claims sweetening in the absence of any intense sweetener.

The Office Action has suggested that the concept of synergism is well known and expected. In fact, the Office Action cited the Schiffman et al. article as one example of synergism in the sweetener art. Although it is true that some specific synergistic combinations are known, it is also true and must be recognized that there is no general knowledge on what synergism is based and when synergism between two compounds can be expected.

This is clear, for example, from reading the Schiffman et al. reference. Particularly, Schiffman et al. studied ternary mixtures of sweeteners to try to find out how they affected each other regarding synergism. Schiffman et al. had previously performed a study with binary mixtures, which is referred to in the introduction and which showed that “[o]verall the presence of a high potency sweetener in a binary mixture produced more synergistic effects than the presence of sugars”.

The ternary test performed by Schiffman et al. included three sugars (fructose, glucose and sucrose) in addition to other sweeteners. According to the results (page 132, middle of right column), 56 of the 79 tested combinations showed synergism. On the other hand, of the 23 combinations that were *not* synergistic, 21 contained at least one bulk sweetener such as fructose, glucose and sucrose. Thus, the sugars that are claimed according to the present invention are sweeteners that do not generally show synergism.

The Examiner’s attention is respectfully directed to page 39 of Schiffman et al. where it is stated that “[n]o clear trends to predict which triads are synergistic were found, although the presence of a bulk sweetener (fructose, glucose) tended to reduce synergism.”

Accordingly, based on Schiffman et al., it is extremely clear that it would not have been obvious to a skilled person that polydextrose was capable of synergistically enhancing the sweetness of the bulk sweeteners of the present invention, i.e. sucrose, fructose glucose, etc.

The abstract of JP 07-067536 discloses that a hard candy having a shape-retaining property can be provided by mixing 15-80 wt % of polydextrose with 20 to 85 % of a sugar or sugar alcohol. The whole invention in the JP publication relates to the shape-retaining characteristic. There is neither teaching in this disclosure nor any

suggestion of synergistically enhancing the sweetness of the sugar or sugar alcohol by polydextrose.

As seen on page 10 of the subject specification and in the examples of the present application, the synergistic effect has been observed in edible products such as milk products and fruit jams, where the polydextrose has surprisingly enhanced the sugar naturally present in the edible product, i.e. lactose in the milk and fructose in the fruit. It is respectfully submitted that there is no way the skilled person based on the JP publication could have known this surprising and advantageous effect of polydextrose on sugars in edible products. The synergistic effect makes it possible to reduce the amount of sugar in the edible product in question. Reducing the sugar level has for a long time been the aim of food industry both for dietetic purposes and for the ever-increasing obesity problem in the industrialized world.

Thus, the present invention provides a solution to the problem or at least helps to reduce the problem in a manner that was not obvious to those skilled in the art.

Yatka et al. use polydextrose as a non-sweet bulking agent to replace other "bulk sweeteners" in a chewing gum. In column 3, lines 61-64, Yatka et al. disclose that when polydextrose is used to replace sucrose and syrup, **the combination results in a lower sweetness of the product**, which calls for the use of intense sweeteners such as aspartame. Thus, Yatka et al. actually teaches away from the instant invention, which is based on the surprising observation that polydextrose, in fact, increases the sweetness of sucrose. It would therefore be impossible to obtain the method of the present invention when considering the teachings of Yatka et al., either alone or in combination with the other cited references.

In summary, it is respectfully submitted that there is no such disclosure in Yatka et al., which alone or in combination with Wong et al. and/or JP 7067536 teaches or suggests to the skilled person that polydextrose can be used for enhancing the sweetness of sugars as defined by the present invention. Yatka et al. teach that polydextrose reduces the sweetness of sucrose in chewing gums. Wong et al. teach that polydextrose enhances the sweetness of 1-chloro-1'-deoxysucrose. JP 7067536 discloses that polydextrose provides low calorie and shape to candy. No matter how

one tries to combine the teachings of these references, the skilled artisan would not be lead to the present invention.

In view of the above, it is respectfully submitted that the method of the present invention as now claimed is both novel and inventive in view of the cited references. Consequently, the rejection of the claims based on Wong et al., JP 7067536 and Yotka et al. are respectfully requested to be withdrawn. It is respectfully submitted that all the claims in the application as presently submitted contain patentable subject matter and a Notice of Allowance is earnestly solicited.

Respectfully submitted,



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